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WASHING AID

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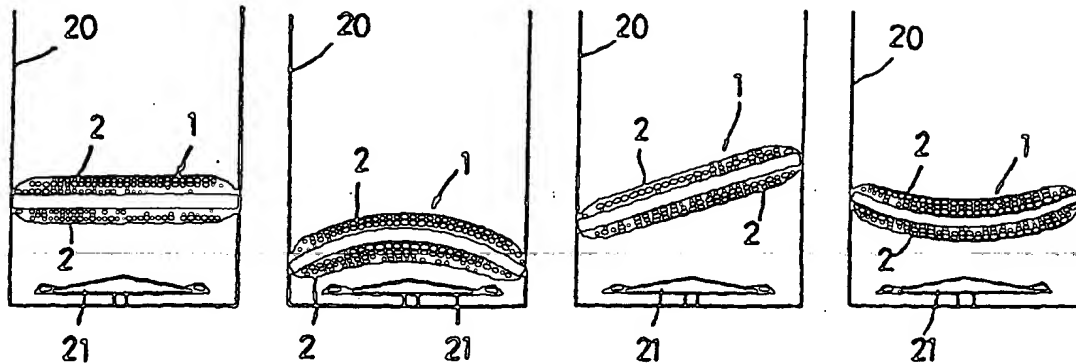
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[There are no amendments to this patent.]



**Abstract**

A washing aid provided with water-permeable members (2) capable of holding the laundry therebetween in the interior of a washing machine. The relative displacement of the water-permeable members (2) with respect to a laundry basket (20) can be restricted.

Technical field

The present invention pertains to a washing aid used in washing clothes with water by a washing machine.

Background OF THE technology

In washing clothes with water by a washing machine, washing nets are used to prevent the clothes from being compressed by an agitating water flow in the washing machine.

As the washing nets, there are spherical bag-shaped nets presented by Japanese Kokai Utility Model No. Sho 58[1983]-94480 or semispherical bag-shaped nets presented in Japanese Kokai Patent Application No. Hei 7[1995]-328279.

However, when the clothes are contained and washed in the spherical or semispherical bag-shaped washing nets, the clothes ARE one-sided or rounded in the washing nets, the shape compression of the clothes cannot be sufficiently prevented.

In the washing nets presented in Japanese Kokai Patent Application No. Hei 7[1995]-80184, shape compression of the clothes is prevented by fixing the clothes sandwiched between the nets by a stopper.

The washing nets presented in Japanese Kokai Patent Application No. Hei 7[1995]-124377 have a section for housing the body part of the clothes and a section for housing the sleeve part. The shape compression of the clothes sandwiched between the nets is prevented by connecting the section for housing the body part and the section for housing the sleeve part by a connector.

Also, the washing nets presented in Japanese Kokai Patent Application No. Hei 7[1995]-289778 are equipped with a hanger for hooking the clothes sandwiched between the nets, so that the shape compression of the clothes is prevented.

As a washing machine that can prevent the shape compression of the clothes, there is a washing machine that places the clothes in nets installed in a washing tub and drops water from above the clothes.

The above-mentioned conventional washing nets are rotated in the washing tub by an agitating water flow. For this reason, the shape compression of the clothes could be sufficiently prevented.

Also, in case the washing method for dropping water from above the clothes is used, the shape compression of the clothes can be prevented, however a special washing machine is required. For this reason, since the shape is apt to be compressed, clothes

such as sweaters, which are recommended to be dry-cleaned, could not be washed with water by a common washing machine.

The purpose of the present invention is to provide a washing aid that can solve the above-mentioned problems.

### Presentation of the invention

The washing aid of the present invention is characterized by the fact that it is equipped with water-permeable members which can sandwich the clothes in a washing tub of a washing machine and that the relative displacement of the water-permeable members with respect to the washing tub can be restricted.

According to the constitution of the present invention, the shape compression of the clothes during washing by the washing machine can be prevented by sandwiching the clothes between the water-permeable members. Furthermore, with the restriction of the relative displacement of the water-permeable members with respect to the washing tub, although an agitating water flow is generated during washing, since the rotation of the water-permeable members in the washing tub can be prevented, the shape compression of the clothes can be prevented.

The water-permeable members are installed at ring-shaped members with a rigidity greater than that of the water-permeable members, and the relative displacement of the water-permeable members with respect to the washing tub can be preferably restricted by pressing the ring-shaped members against the inner circumference of the above-mentioned washing tub.

Thus, the relative displacement of the water-permeable members to the washing tub can be restricted by the friction between the washing tub and the ring-shaped members by pressing



the ring-shaped members against the inner circumference of the washing tub.

In the washing aid of the present invention, the water-permeable members consist of a pair of nets, and the outer circumference of each net is respectively installed at the ring-shaped member with a rigidity greater than that of each net. The relative displacement of the water-permeable members with respect to the washing tub can be restricted by pressing the ring-shaped members against the inner circumference of the above-mentioned washing tub. Preferably, two ring-shaped members can be mutually connected so that the clothes can be sandwiched by two nets, and two nets can be elastically stretched so that an elasticity can be exerted on the sandwiched clothes.

Thus, since two net can sandwich the clothes by applying elasticity, the shape compression of the clothes can be reliably prevented.

Even if nets with sufficient flexibility are used to avoid damaging the clothes, the relative displacement of the water-permeable members to the washing tub can be restricted by the friction between the washing tub and the ring-shaped members by pressing the ring-shaped members with a rigidity greater than that of each net against the inner circumference of the washing tub.

When these two ring-shaped members are connected, an opening larger than the mesh of each net is preferably formed between the two ring-shaped members.

Thus, the water flow was smoothly introduced between the two nets during washing, so that the washing effect can be improved.

The ring-shaped members have elasticity, and the relative displacement of the water-permeable members with respect to the

washing tub can be preferably restricted by stretching the ring-shaped members against the inner circumference of the washing tub.

Thus, the friction between the washing tub and the ring-shaped members is increased, so that the relative displacement of the water-permeable members with respect to the washing tub can be reliably restricted.

Preferably, the water-permeable members can be folded, and the ring-shaped members can be elastically bent and twisted.

Thus, the washing aid of the present invention can be compactly stored.

The relative displacement of the water-permeable members with respect to the washing tub can be preferably restricted by being attached to the inner circumference of the washing tub via a suction cup.

Thus, the relative displacement of the water-permeable members with respect to the washing tub can be reliably restricted.

According to the washing aid of the present invention, since the shape compression of the clothes can be sufficiently prevented even if an agitating water flow is generated during washing, the clothes such as a sweater, whose shape is easily compressed, can be washed with water by a common washing machine. Furthermore, the washing effect is improved without damaging the clothes, and the space at a time of transport when not in use or at a time of sales can be reduced by compacting.

### Brief description of the figures

Figure 1 is an oblique view showing the washing aid of a first application example of the present invention.

Figure 2 is a planar view prior to washing of the washing aid of the first application example of the present invention.

Figure 3 is a cross section showing the main parts of the washing aid of the first application example of the present invention.

Figures 4(1), 4(2), 4(3), and 4(4) show installation states in a washing tub of the washing aid of the first application example of the present invention.

Figure 5 shows a compactness sequence of ring-shaped members of the first application example of the present invention.

Figure 6 is a planar view showing the washing aid of the second application example of the present invention.

Figure 7 is a planar view prior to washing of the washing aid of the third application example of the present invention.

Figure 8(1) is a planar view showing a state in which the clothes are not contained in the washing aid of the fourth application example of the present invention. Figure 8(2) is a planar view showing a state in which the clothes are contained.

### Best embodiments of the invention

Next, the first application example of the present invention is explained referring to Figures 1-5.

A washing aid 1 shown in Figures 1-3 is equipped with water-permeable members consisting of a pair of nets 2, ring-shaped members 3 at which the outer circumference of each net 2 is

respectively installed, and a fastener 4 for connection of the ring-shaped members 3.

Each net 2 can be folded and is laced up from fibers made of a synthetic resin having flexibility, for instance. As shown in Figure 2, an article of clothing 10 is arranged between two nets 2. Also, as shown in Figure 2, a pocket P composed of water-permeable members is installed in one or both of the nets 2 so that small articles can also be contained.

Each ring-shaped member 3 has a rigidity higher than that of each net 2. Each ring-shaped member 3 is constituted by molding a linear member made of a metal with a flat cross section having elasticity into an approximately rectangular frame shape. Each ring-shaped member 3 is covered with a cover 6 made of a fabric, and each cover 6 is sewn on the outer circumference of the nets 2 by a thread (not shown in the figure).

The fastener 4 has a pair of ribbons 4a made of a fabric sewn on each cover 6 by a thread (not shown in the figure) so that it is placed along the outer circumference of the nets 2, teeth 4b being installed at the peripheral edge of each ribbon 4a, and a slider 4c. When two teeth 4b are meshed with each other by the sliding of the slider 4c, two ring-shaped members 3 are mutually connected so that the clothes 10 can be sandwiched between two nets 2. Also, when the mutual meshing of two teeth 4b is released by the sliding of the slider 4c, the clothes 10 can be taken out of two nets 2.

When one end 4' and the other end 4" of the fastener 4 are separated, an opening 15 larger than the mesh of each net 2 is formed between two ring-shaped members 3 in a state in which two ring-shaped members 3 are connected by the fastener 4.

As shown in Figures 4(1)-4(4), in the washing tub 20 of a washing machine, the relative displacement of two nets 2, in which the clothes 10 are sandwiched by the above-mentioned one pair of nets 2, with respect to the washing tub 20 can be restricted. In other words, Figure 4(1) shows the case where the inner circumference of the washing tub 20 and the outer circumference of the washing aid 1 are approximately coincident and the above-mentioned ring-shaped members 3 are slightly stretched against the inner circumference of the washing tub 20. Figure 4(2) shows the case where the outer circumference of the washing aid 1 is larger than the inner circumference of the washing tub 20 and the above-mentioned ring-shaped members 3 are pressed in a state, in which the upper surface is bent so that it can be a convex surface, against the inner circumference of the washing tub 20. Figure 4(3) shows the case where the outer circumference of the washing aid 1 is larger than the inner circumference of the washing tub 20 and the above-mentioned ring-shaped members 3 are pressed in a horizontally inclined and slightly stretched against the inner circumference of the washing tub 20. Figure 4(4) shows the case where the outer circumference of the washing aid 1 is larger than the inner circumference of the washing tub 20 and the above-mentioned ring-shaped members 3 are bent so that it can be a concave surface, against the inner circumference of the washing tub 20. In any cases, the relative displacement of two nets 2 with respect to the washing tub 20 is restricted by the friction between the washing tub 20 and the ring-shaped members 3.

With the control of the relative displacement of the nets 2, in which the clothes 10 are sandwiched, with respect to the washing tub 20, even if an agitating water flow is generated by

the rotation of an agitator 21 during washing, the rotation of the nets 2 in the washing tub 20 can be hindered. Thus, the shape compression of the clothes 10 sandwiched between the nets can be sufficiently prevented, and the clothes such as sweater, whose shape is easily compressed and in which a dry cleaning is recommended, can be washed with water in a common washing machine. Also, two nets 2 can be stretched so that the elasticity can be applied to the sandwiched clothes 10. Thus, since two nets 2 can sandwich the clothes 10 by applying the elasticity, the shape compression of the clothes 10 can be reliably prevented. Also, in case the nets 2 with sufficient flexibility are used to avoid damaging the clothes 10, the relative displacement of the nets 2 with respect to the washing tub 20 can be restricted by the friction between the washing tub 20 and the ring-shaped members 3 by pressing the ring-shaped members 3 with a rigidity greater than that of each net 2 against the inner circumference of the washing tub 20. Furthermore, since the ring-shaped members 3 are pressed against the inner circumference of the washing tub 20 by the elasticity, the friction between the washing tub 20 and the ring-shaped member 3 is increased, so that the relative displacement of the nets 2 with respect to the washing tub 20 can be reliably restricted. Also, since the opening 15 is formed between two ring-shaped members 3 being mutually connected, the water flow is smoothly introduced between two nets 2 from the opening 15 during washing, and the washing effect can be improved.

The ring-shaped members 3 are elastically bent and twisted. Thus, each net 2 can be folded, and the washing aid 1 can be compactly stored. For example, as shown in Figure 5, the four positions of each point a, b, c, and d in the figure are

sequentially changed as shown by the arrow of the figure, so that three circles can be superimposed. Thus, the housing space of the washing aid 1 when not in use and the space at a time of transport or sales can be reduced. In particular, when the ring-shaped members 3 are composed of a linear member with a flat cross section, the state, in which these three circles are superimposed, can be maintained without putting into a storage bag, etc., or fixing by thread, etc. Therefore, the necessity of using other members to maintain the state in which these circles are superimposed is eliminated.

Figure 6 shows the second application example of the present invention. The difference between this example and the above-mentioned first application example is that several suction cups 30 are installed at the outer circumference of the ring-shaped members 3 and the suction cups 30 are attached to the inner circumference of the washing tub 20, so that the relative displacement of the nets 2 with respect to the washing tub 20 is restricted. Otherwise, this example is similar to the first application example, and the same parts are shown by the same symbols.

Figure 7 shows the third application example of the present invention. The difference between this example and the above-mentioned first application example is that the net and the ring-shaped member 3 are respectively single units and the net 2 is installed on the ring-shaped member 3. The net 2 has a planar oblong shape, and the dimension in the longitudinal direction is about twice that of the dimension in the lateral direction the ring-shaped member 3. A protruding part 2b from the ring-shaped member 3 is shaken with respect to a connecting part 2a with the ring-shaped member 3, so that a twice-folded state, in which the

connecting part 2a and the protruding part 2b are superimposed, is formed. A fastener 50 is installed at the outer circumference of the net 2. The connecting part 2a and the protruding part 2b of the twice-folded net 2 can be mutually connected by fastener 50. Also, as the fastener 50, Magic tape (trademark) may also be used. Otherwise, this example is similar to the first application example, and the same parts are shown by the same symbols.

Figures 8(1) and 8(2) show the fourth application example of the present invention. The difference between this example and the above-mentioned first application example is that a pair of ring-shaped members 3 are mutually connected by a rubber band 60 instead of the fastener 4. Figure 8(1) shows a state in which the clothes are not housed, and Figure 8(2) shows a state in which the clothes are housed and the rubber band 60 is stretched. Otherwise, this example is similar to the first application example, and the same parts are shown by the same symbols.

After washing using the above-mentioned washing aid 1, the clothes 10 are placed in the washing aid 1, so that the washing aid 1 may also be used in a dryer. At that time, the washing aid 1 is placed on several article drying poles, or a clothespin is installed as a leg at the washing aid 1, and the washing aid 1 may also be placed on floor, etc., via the clothespin.

The present invention is not limited to the above-mentioned embodiments. For example, the washing machine may also be a single-tub type full automatic washing machine or a double-tub type washing machine. Also, the shape of the washing tub 20 is not limited in particular, and the planar shape can be circular, rectangular, etc. For example, the relative displacement with respect to the washing tub 20 can be restricted by mounting the washing aid 1 with an approximately rectangular outer



circumference at the inner circumference of the planar circular washing aid 20 so that the rectangular parts are pressed. Also, the water-permeable members are not limited to nets but may also be fabrics or grid-shaped members made of a hard material, for instance. The shape of the ring-shaped members is not limited to the rectangular shape but may also be circular or elliptic, for instance. The material of the ring-shaped members is not limited to metal but may also be a synthetic resin or nonelastic material. Also, the connection means of the ring-shaped members or water-permeable members is not limited to the fastener or rubber band, and for example, a snap may also be used.

#### Claims

1. A washing aid characterized by the fact that it is equipped with water-permeable members which can sandwich the laundry in a washing tank of a washing machine; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled.

2. The washing aid of Claim 1 characterized by the fact that the water-permeable members are installed at ring-shaped members with a rigidity greater than that of the water-permeable members; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members against the inner circumference of the above-mentioned washing tank.

3. The washing aid of Claim 1 characterized by the fact that the water-permeable members consist of a pair of nets; that the outer circumference of each net is respectively installed at a ring-shaped member with a rigidity greater than that of each net;

that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members against the inner circumference of the above-mentioned washing tank; that two ring-shaped members can be mutually connected so that the laundry can be sandwiched by two nets; that two nets can be elastically deformed so that an elasticity can be exerted on the laundry sandwiched.

4. The washing aid of Claim 2 characterized by the fact that the water-permeable members consist of a pair of nets; that the outer circumference of each net is respectively installed at a ring-shaped member with a rigidity greater than that of each net; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members against the inner circumference of the above-mentioned washing tank; that two ring-shaped members can be mutually connected so that the laundry can be sandwiched by two nets; that two nets can be elastically deformed so that an elasticity can be exerted on the laundry sandwiched.

5. The washing aid of Claim 3 characterized by the fact that, with these two ring-shaped members connected to each other, an opening larger than the mesh of each net between two ring-shaped members is formed.

6. The washing aid of Claim 4 characterized by the fact that, with these two ring-shaped members connected to each other, an opening larger than the mesh of each net between two ring-shaped members is formed.

7. The washing aid of Claim 2 characterized by the fact that the ring-shaped members have elasticity; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped

members in an elastically deformed state against the inner circumference of the above-mentioned washing tank.

8. The washing aid of Claim 3 characterized by the fact that the ring-shaped members have elasticity; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members in an elastically deformed state against the inner circumference of the above-mentioned washing tank.

9. The washing aid of Claim 4 characterized by the fact that the ring-shaped members have elasticity; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members in an elastically deformed state against the inner circumference of the above-mentioned washing tank.

10. The washing aid of Claim 5 characterized by the fact that the ring-shaped members have elasticity; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members in an elastically deformed state against the inner circumference of the above-mentioned washing tank.

11. The washing aid of Claim 6 characterized by the fact that the ring-shaped members have elasticity; that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by pressing the ring-shaped members in an elastically deformed state against the inner circumference of the above-mentioned washing tank.

12. The washing aid of Claim 7 characterized by the fact that the water-permeable members can be folded and that the ring-shaped members can be elastically bent and twisted.

13. The washing aid of Claim 8 characterized by the fact that the water-permeable members can be folded and that the ring-shaped members can be elastically bent and twisted.

14. The washing aid of Claim 9 characterized by the fact that the water-permeable members can be folded and that the ring-shaped members can be elastically bent and twisted.

15. The washing aid of Claim 10 characterized by the fact that the water-permeable members can be folded and that the ring-shaped members can be elastically bent and twisted.

16. The washing aid of Claim 11 characterized by the fact that the water-permeable members can be folded and that the ring-shaped members can be elastically bent and twisted.

17. The washing aid of any of Claims 1-16 characterized by the fact that the relative displacement of the water-permeable members with respect to the washing tank can be controlled by being adsorbed to the inner circumference of the washing tank via a sucking disc.

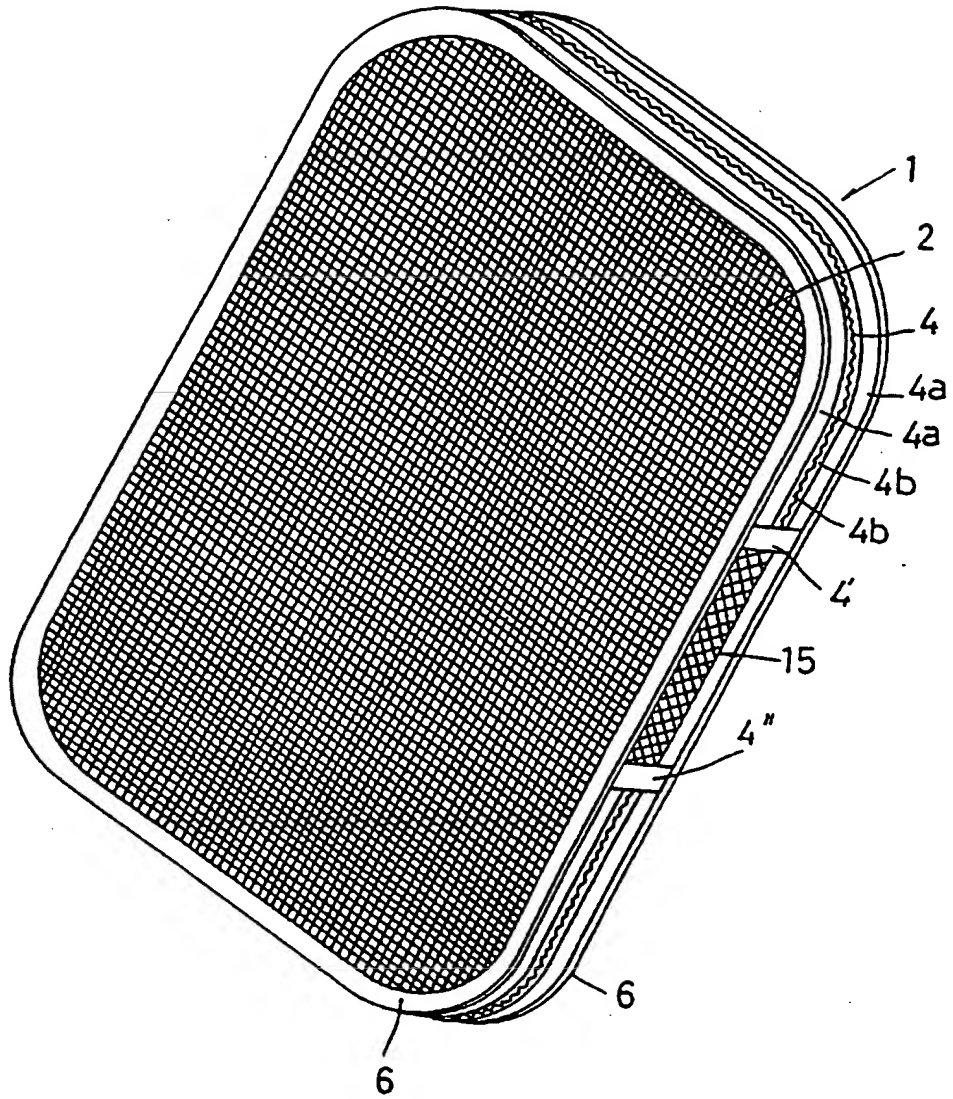


Figure 1

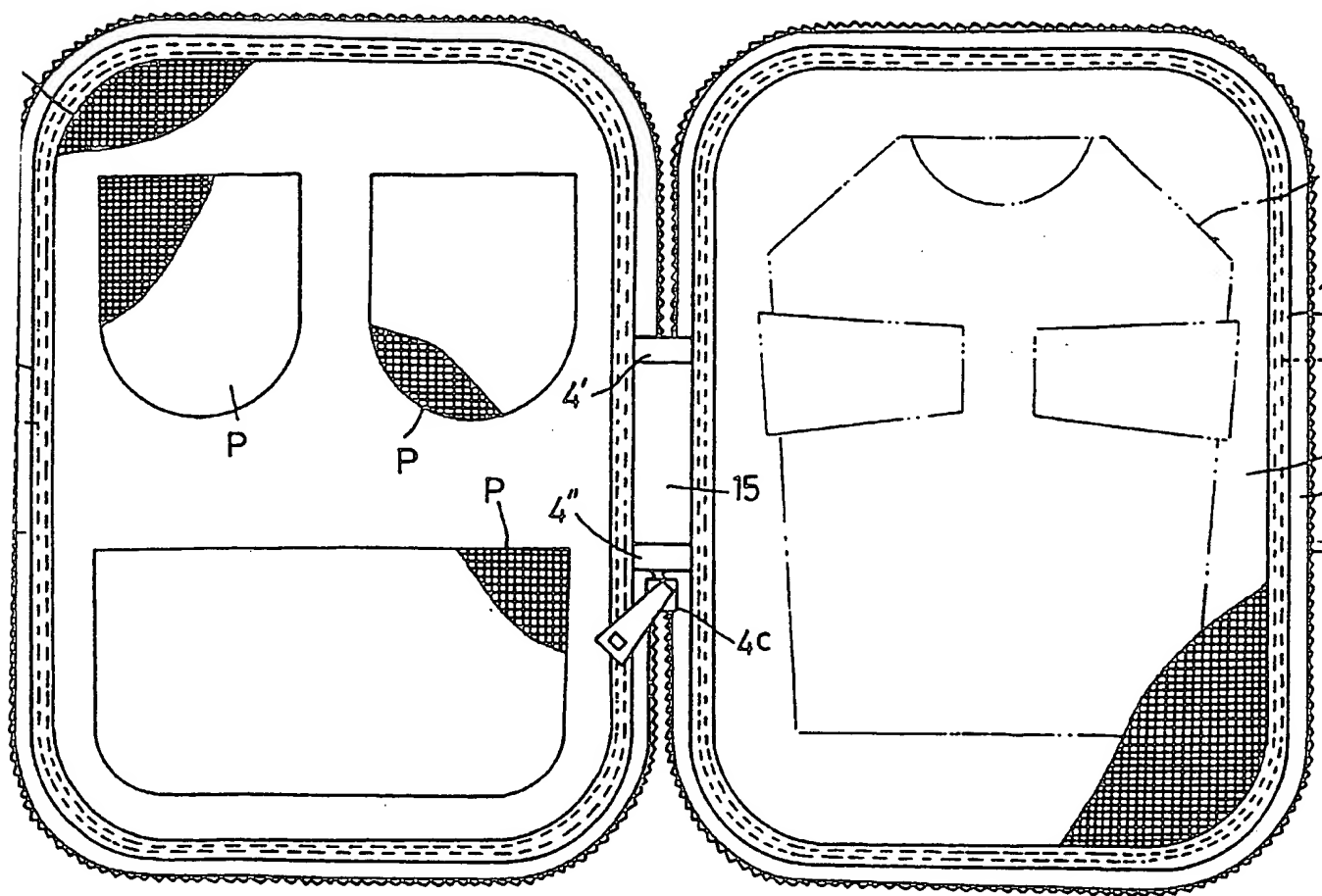


Figure 2

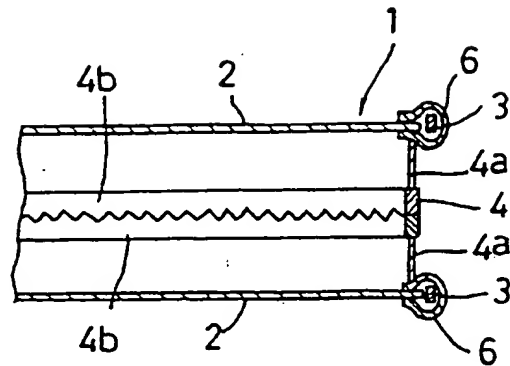


Figure 3

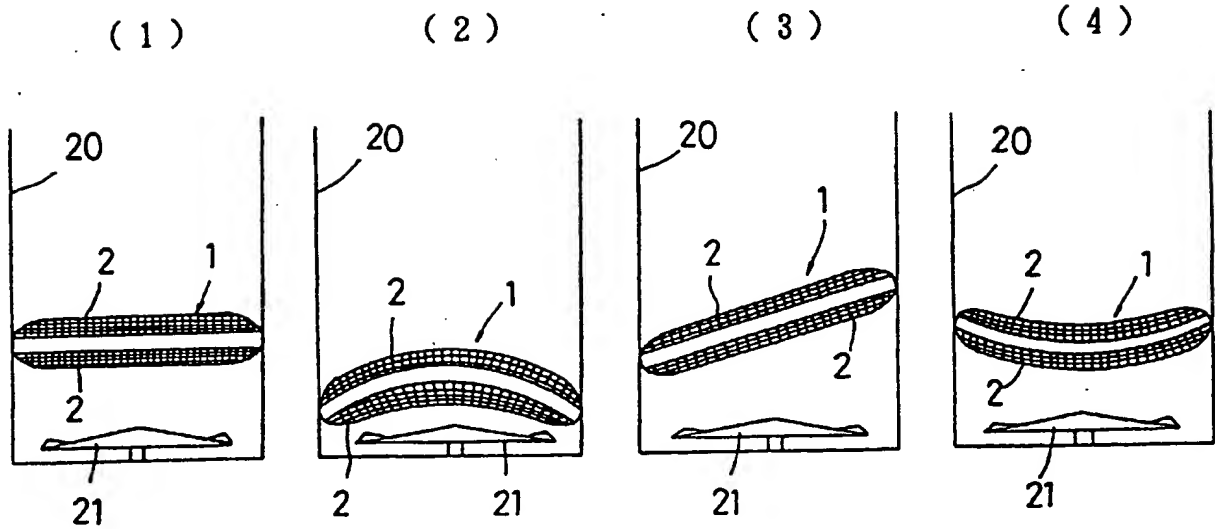


Figure 4

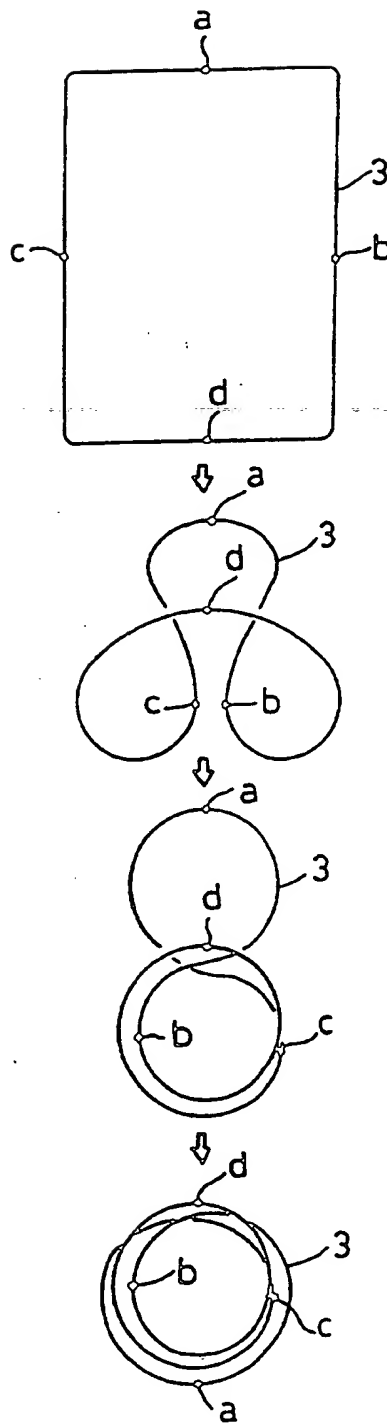


Figure 5



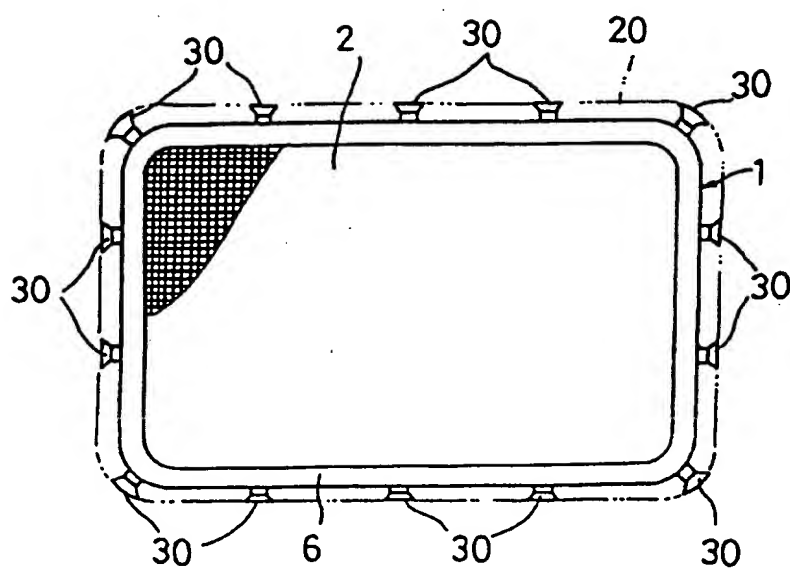
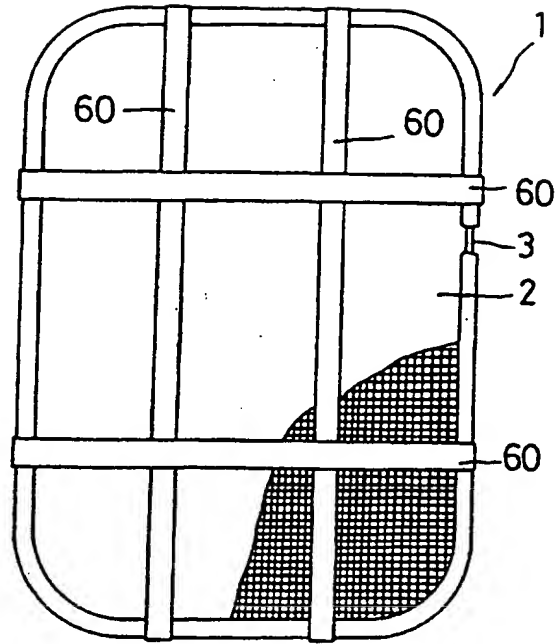


Figure 6



( 1 )



( 2 )

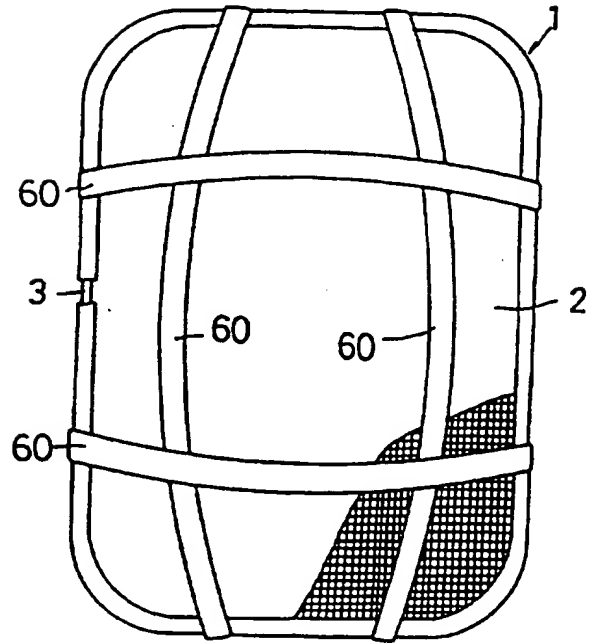


Figure 8

**A. CLASSIFICATION OF SUBJECT MATTER**Int. Cl<sup>6</sup> D06F35/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Int. Cl<sup>6</sup> D06F35/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922 - 1997
Kokai Jitsuyo Shinan Koho	1971 - 1996
Toroku Jitsuyo Shinan Koho	1994 - 1997

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, 52-88470, U (Tadashi Ando), July 1, 1977 (01. 07. 77) (Family: none)	1, 17
A	JP, 54-90968, U (Kayoko Sakagami), June 27, 1979 (27. 06. 79) (Family: none)	1 - 17

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July 15, 1997 (15. 07. 97)Date of mailing of the international search report  
August 12, 1997 (12. 08. 97)Name and mailing address of the ISA/  
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